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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HELMUT JERG and STEFAN A. STAEDEL

Appeal 2009-005269
Application 10/734,054
Technology Center 2800

Decided: January 12, 2010

Before JOHN C. MARTIN, KARL D. EASTHOM, and THOMAS S. HAHN, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal[1] under 35 U.S.C. § 134(a) from the rejections of claims 11-28, the only claims pending. (Br. 3). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants invented a fire protection device that includes a fault current circuit breaker and at least one gas sensor. The fault current circuit breaker includes a relay 8 and a cumulative current transformer 9, which detects the presence of an excessive current (e.g., due to a short circuit). Relay 8 is also responsive to a gas sensor 5, which detects the presence of a combustion gas (e.g., carbon monoxide) generated by a fire. The relay disconnects an electrical supply to an appliance upon detection of an excessive current or gas level. In one embodiment, the fault current circuit breaker resides within a mains plug housing 1, while the gas sensor 5 resides in the appliance 2. A transformer 7 (in the mains plug housing) transforms incoming supply voltage (230 V) to a lower voltage which is supplied to a main switch 6 (in the appliance for motor control, etc.) (Abstract; Fig.1; Spec. 4: 1st ¶, 6: 1st ¶.)

Exemplary claim 11 follows:

> 11. A fire protection device for domestic appliances, comprising: at least one fault current circuit breaker coupled to the input electrical supply of at least one conductor of a domestic appliance, which fault current

[1] This opinion refers to Appellants' Brief [hereinafter "Br."], the Examiner's Answer [hereinafter "Ans."], and the Final Rejection (mailed Mar. 30, 2007) [hereinafter "Fin. Rej."].

> circuit breaker disconnects said electrical supply from said appliance when said fault current circuit breaker senses a fault current in said at least one conductor; and
>
> at least one gas sensor coupled to sense the quantity of at least one control gas in said appliance, which gas sensor also causes said electrical supply to be disconnected from said appliance when said gas sensor senses a predetermined quantity of said at least one control gas.

The Examiner relies on the following prior art references:

Marshall	US 1,979,976	Nov. 6, 1934
Justi	US 3,973,192	Aug. 3, 1976
Cheyne	US 5,604,387	Feb. 18, 1997
Aromin	US 5,943,199	Aug. 24, 1999
Simpson	US 5,946,180	Aug. 31, 1999
Daffron	US 6,046,441	Apr. 4, 2000

The Examiner rejected as obvious under 35 U.S.C. § 103(a):

Claims 11, 12, and 18-20 based on Simpson and Daffron;

Claim 13 based on Simpson, Daffron, and Aromin;

Claims 14-17 based on Simpson, Daffron, Aromin, and Cheyne;

Claim 21 based on Simpson, Liu, and Daffron;

Claims 22, 23, and 25-27 based on Simpson, Liu, Daffron, and Justi; and

Claims 22, 24-26 and 28 based on Simpson, Liu, Daffron, and Marshall. Because claim 24 depends on claim 23, the Examiner apparently intended to include claim 23 in this group of claims.

ISSUES

Appellants raise several issues with respect to the Examiner's obviousness rejections. The issue with respect to claim 11 is: Did Appellants demonstrate that the Examiner erred in combining Simpson's fault circuit breaker with Daffron's gas sensor circuit breaker? The remaining issue is: Did Appellants demonstrate error in the Examiner's other obviousness rejections?

FINDINGS OF FACT

There are no material factual disputes. Appellants and the Examiner primarily agree on what the references teach. To the extent any such disputes exist, they are addressed below.

PRINCIPLES OF LAW

"[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). A determination of obviousness can be based on a showing that "there was an apparent reason to combine the known elements in the fashion claimed . . . ." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Appellant has the burden on appeal to show reversible error by the Examiner in maintaining the rejection. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (citation omitted).

"[W]hen . . . the prior art . . . is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." *KSR,* 550 U.S. at 416 (citation omitted). "The

combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. "[W]hen a patent 'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." (citation omitted). *Id.* at 417.

ANALYSIS

Rejection of claims 11, 12, and 18-20 Based on Simpson and Daffron

Appellants' arguments (Br. 6-8) focus on claim 11, hereby selected as representative of the group. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants argue (Br. 7) that "Simpson provides no hint of the desirability of sensing gaseous combustion by-products . . . and . . . Daffron provides no hint of the desirability of a fault current circuit breaker . . . ." This argument does not address the Examiner's findings or rationale, but rather, attacks each reference individually. "[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references." *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (citation omitted).

As Appellants acknowledge (Br. 6), Simpson discloses "an electrical connection safety apparatus that . . . disconnects power to the outlet and connector whenever the cord current rating is exceeded" while Daffron discloses "a circuit breaker mechanism for disabling power . . . upon receiving a signal from a fire detection assembly comprising a plurality of carbon sensing means . . . ." The Examiner made similar findings (Ans. 4-5), combining Simpson's fault circuit breaker with Daffron's gas sensor

circuit breaker, "[s]ince both fault currents and gaseous combustion by-products can be an indication of the presence of a fire," *id.* at 5.

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR,* 550 U.S. at 416. To arrive at the claimed invention, the Examiner merely combined familiar current and gas sensing fault protection devices to yield the predictable result of a fire avoidance device that breaks appliance supply current if either the current or gas level exceeds a pre-determined amount. (Ans. 4-5.) This combination of familiar elements, notwithstanding Appellants' arguments (Br. 8) alleging a lack of a motivation to combine the references and a failure to teach Appellants' "arrangement" or "perform the same function," establishes prima facie obviousness.

Based on the foregoing discussion, Appellants' arguments have not demonstrated error in the rejection of claim 11 or the rejection of claims 12 and 18-20, which fall therewith. *In re Nielson*, 816 F.2d 1567, 1569, 1572 (Fed. Cir. 1987); 37 C.F.R. § 41.37(c)(1)(vii).

Rejection of Claim 13 Based on Simpson, Daffron, and Aromin

As Appellants acknowledge (Br. 10), "Aromin provides a ground fault indicator that is self-contained within the plug as for [sic] mains connection . . . ." Claim 13 requires the fault detector of claim 11 to be "integrated into a mains plug of said electrical supply of said appliance." No dispute exists over whether Aromin teaches an integrated mains plug fault detector. Rather, Appellants maintain (Br. 10) that Aromin's "unit is self-contained and receives no external stimulus" and "[t]herefore . . . is improperly

combined with the aforesaid Simpson and Daffron references and in any event such a combination would not result in the present invention." Assuming that a portion of this argument relates to the alleged absence of an external gas sensor stimulus in the collective teachings, Daffron supplies that limitation according to the Examiner's rejection. (Ans. 4-5, 14.) *See also Keller*, 642 F.2d at 426 (quoted *supra*.)

Appellants' related argument (Br. 10) is that Aromin's system "is responsive to a leakage current and has provided for the safety of the user from electric shock and is ineffective in the case of fire." This argument is unpersuasive because the Examiner did not employ Aromin's specific circuit teachings (other than to note the similarities between Aromin and Simpson as circuit breaker/fault detectors). Rather, the Examiner merely substituted circuit housings "to provide a single plug unit for easier use and [to] avoid extra connections" (Ans. 7) by replacing Simpson's outlet adapter housing (having male prongs and female receptacles (Simpson, Fig. 9)) with Aromin's mains plug housing (having only male prongs, Aromin, Fig. 8). (Ans. 6-7, 14-15.)[2]

"[W]hen . . . the prior art . . . is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." *KSR,* 550 U.S. at 416 (citation omitted). The "mere substitution" of Aromin's mains plug housing for Simpson's adapter housing yields the predictable result of a compact housing containing a fault

[2] Additionally, Appellants' combinability argument *supra* is unpersuasive because each reference discloses plug units for cutting off supply current to appliances for safety reasons related to excessive current. (*See e.g.* Simpson Figs. 9-12; Daffron Figs. 1-2; Aromin Figs. 6-8; *accord* Br. 9, 10 (describing Simpson, Daffron, and Aromin); Ans. 4-6 (same).)

protection circuit, as the Examiner reasoned (Ans. 6-7). As such, Appellants have failed to show error in the Examiner's rejection of claim 13.

Rejection of Claims 14-17 Based on Simpson, Daffron, Aromin, and Cheyne

Appellants' arguments focus on claim 14, hereby selected as representative of the group. *See* 37 C.F.R. § 41.37(c)(1)(vii). Claim 14 depends from claim 13 and requires "a main switch for supplying individual components of said domestic appliance . . . coupled to said mains plug [of claim 13] for supplying low voltage to said components."

The Examiner found (Ans. 7) that Cheyne teaches "a low voltage switch (7) for supplying electric power at a low voltage level to a load of a household appliance from a higher voltage supply . . . ." Appellants agree with these findings (Br. 11): "Cheyne discloses low voltage switch 7 for supplying a low voltage load to an appliance such as a laundry machine."

However, Appellants argue (Br. 12) that "Cheyne discloses a field effect transistor illustrated at 7 that hardly acts as a mains [sic: main] switch, as asserted by the Examiner." Appellants also contrast (*id.*) their switch with Cheyne's, describing theirs as "a simple switch illustrated generally at 6."

The Examiner responded (Ans. 15) by reiterating that Cheyne is relied upon only for its low voltage teachings, while Simpson is relied upon to teach the "main switch" recited in claim 14. (Fin. Rej. 6 ("Simpson does not disclose the main switch (42) as supplying low voltage to said components").) Appellants have not adequately responded to this position of the Examiner.

In addition, as Appellants and the Examiner agree that Cheyne teaches a low voltage switch (7), Appellants' argued distinction that their switch is "simple" does not demonstrate error. Claim 14 does not recite "a simple switch," nor does the Specification so define the recited "main switch." While Appellants disclose a box 6 as representing the main switch (MS) (*see* Fig. 1), nothing in the claim, in light of this limited disclosure, precludes Cheyne's switch 7 from satisfying the claim.

Finally, because claim 14 does not require that the recited "main switch" function as a *mains* switch (i.e., a line supply switch), the claim is broad enough to read on adding Cheyne's low-voltage-generating circuitry (including switch 7) to the appliance in Simpson (as modified above in view of Daffron) without altering Simpson's relay (circuit breaker) 42. Such a modification would satisfy the purpose stated by the Examiner of supplying low voltage to the individual components of the appliance of Simpson in order to improve safety and reduce switch and insulation costs. (Fin. Rej. 6.) The undefined claim term "main switch" is broad enough to read on Cheyne's switch 7 or on any of Cheyne's other switches 46, 48, and 50 for connecting components 40, 42, and 44, respectively, between the low voltage supply rails 12 and 2. (Cheyne, Figs.1, 3; col. 4, l. 66 to col. 5, l. 30.)

Therefore, Appellants have failed to demonstrate error in the rejection of claim 14 or claims 15-17, which fall therewith. *Nielson*, 816 F.2d at 1572; 37 C.F.R. § 41.37(c)(1)(vii).

Rejection of Claim 21 Based on Simpson, Liu, and Daffron

Appellants assert that Simpson does not satisfy the claim 21 limitation of "a cumulative current transformer operable to constantly measure the sum of all currents." Appellants assert that Simpson instead "discloses a simple one-turn primary transformer 32" (Br. 13) which "measures an instantaneous load current" (Br. 14).

In response, the Examiner found that:

> Simpson does indeed disclose a cumulative current transformer (32, 34), more specifically (32c, 34c), operable to constantly measure the sum of all currents, as recited in claim 21. See Fig. 6; column 11, lines 52-67; and column 12, lines 1-7, which show the cumulative current transformer consisting of a primary transformer (32c) accompanied by secondary winding (34c) *upstream of junction point (98) for measuring a total current, in other words a sum of all currents, before the total current splits at junction point (98) into individual branches measured by primary transformers (32a, 32b)* with secondary windings (34a, 34b) and is delivered to receptacles (16a, 16b). *The cumulative current transformer (32c, 34c) is in constant operation to measure the sum of all currents.*

(Ans. 16 (original emphasis omitted) (other emphasis added).)

Appellants, who did not file a reply brief, have failed to address this specific finding by the Examiner, which relies on Simpson's upstream transformer 32c/34c. That particular transformer, as the Examiner explained, measures the total current flowing through the two branches monitored by transformers 32a/34a and 32b/34b. (*See* Simpson Fig. 6.) Appellants have not explained why it is improper to read claim 21 on Simpson in this manner.

The Examiner also found that "[c]olumn 12, lines 63-67 discloses 'disconnect[ing] power to outlet 62...upon detection of an overload fault

with respect to the total detected current rating for outlet 62.'" (Ans. 17 (referring to Simpson).) This overload deviation from the total corresponds to "the detection of a predetermined deviation from a predetermined current sum," as set forth in claim 21. Claim 21 does not preclude this disconnection response to an instantaneous current spike (above a constantly monitored sum of currents) by Simpson's transformer 32c/34c, contrary to any implied argument otherwise. (*See* Br. 14.)

Appellants also rely (Br. 13) on arguments presented for claim 11. Based on the foregoing discussion of claim 11, those arguments also fail to demonstrate error in the rejection of independent claim 21.

Rejection of Claims 22, 23, and 25-27 based on Simpson, Liu, Daffron, and Justi

Appellants do not present separate patentability arguments for these claims, but rather rely on arguments presented for claims 11, 21 and 25. (Br. 13-14.) Based on the foregoing discussion of those claims, Appellants have failed to demonstrate error in the rejection of claims 22, 23, and 25-27. *Nielson*, 816 F.2d at 1572; 37 C.F.R. § 41.37(c)(1)(vii).

Rejection of Claims 22, 24-26 and 28 Based on Simpson, Liu, Daffron, and Marshall

As noted *supra*, the Examiner impliedly rejected claim 23, on which claim 24 depends, on the above ground.

Appellants' arguments (Br. 15-16) focus on claim 22, hereby selected as representative of the group. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants assert (Br. 15-16) that Marshall teaches detection of a gas before it has been

combusted. Appellants argue (Br. 16) that "the present invention detects gases that are the byproduct of an ongoing conflagration and, therefore, provide a fire detection means." Appellants conclude that combining the pre-combustion gas detection means of Marshall "would not result in the present invention." (*Id.*)

The Examiner responded by quoting Marshall to support the finding that the term "combustion" is broad enough to encompass chemical reactions which occur without burning or a flame (i.e. without a "conflagration"):

> Examiner asserts that the disclosure of Marshall includes the detection of gases that are the byproduct of combustion. See page 3, lines 33-50, in which it is discussed that "the term 'combustion' also applies to...such chemical reactions as well as the burning of substances in [oxygen or] [] air...An example [being] the chemical union of hydrogen and chlorine, a reaction which involves heat and resembles the burning of hydrogen in oxygen." Applying the detection of the hydrogen reacting with chlorine for safety purposes, as disclosed by Marshall, in the fire protection device of Simpson in view of Liu and Daffron would provide the capability of detecting chlorine as a non-carbonaceous byproduct of combustion.

(Ans. 18 (quoting Marshall at page 3, ll. 36-46) (first two brackets added, emphasis and third bracket by the Examiner).)

Appellants have not provided any response to the above rationale, let alone demonstrated that it is erroneous.

Appellants also rely on arguments presented for claims 21 (*see supra*) and 25 (*see infra*). Based on the foregoing discussion of those claims, Appellants' arguments fail to demonstrate error in the rejection of claim 22 and claims 24-26 and 28 falling therewith. *Nielson*, 816 F.2d at 1572; 37 C.F.R. § 41.37(c)(1)(vii).

Therefore, the express rejection of claims 22, 24-26, and 26, and the implied rejection of claim 23, on the above-stated ground are sustained.

CONCLUSION

With respect to claim 11, Appellants did not demonstrate that the Examiner erred in combining Simpson's fault circuit breaker with Daffron's gas sensor circuit breaker. With respect to the remaining claims on appeal, Appellants did not demonstrate error in the Examiner's obviousness rejections.

DECISION

We affirm the Examiner's decision rejecting claims 11-28.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136. *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

KMF

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